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TITLE: Relationship Between Mammographic Density and IGF Levels  
Among Hispanic and Non-Hispanic White Women

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<b>13. ABSTRACT (Maximum 200 Words)</b>  The purpose of this study is to use information collected from the parent study, the Women's Breast and Bone Density study (WBBD) to investigate the relationship between breast density and IGF levels in pre and postmenopausal Hispanic and non-Hispanic White women. The parent study was completed by the May 31, 2003. In all, recruitment was a lower than expected for the Hispanic women, but all recruitment goals were either met or exceed in the non-Hispanic White women. The total numbers are: 60 premenopausal Hispanic women, 75 premenopausal non-Hispanic White women, 28 postmenopausal Hispanic women, and 78 postmenopausal White women. The serum and plasma samples have been collected for the Insulin-like Growth Factor (IGF) and Insulin-like Growth Factor Binding Protein (IGFBP) assays used in this study (including IGF-1, IGFBP-3, and Free IGF-1), however, the actual analysis will be completed in October 2003 - November 2003. The mammographic density measurements are currently being finalized and will be merged with the data collected from questionnaires, physical measurements, and the dual energy x-ray absorptiometry (DXA) scan. When the laboratory analyses are complete, the results of those tests will be merged with the clean WBBD data so that the analysis can be completed and manuscripts written.				
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## **Introduction**

Breast cancer is one of the most common cancers among Hispanic and non-Hispanic White women, although Hispanic women have considerably lower incidence rates. Many laboratory studies have focused on the role of Insulin-like Growth Factors (IGFs) in breast cancer development and progression. Recently, epidemiological studies have begun to investigate the association between breast cancer risk and circulating levels of IGFs and their binding proteins (IGFBPs). One study investigated the relationship between IGF levels and mammographic density, a known predictor for breast cancer, in a primarily Caucasian population. Most studies conclude that there is an association between circulating IGF and IGFBP levels and breast cancer risk in premenopausal women, but not in postmenopausal women. It has been proposed that free IGF-1 (or unbound IGF) is a stronger risk factor for breast cancer. However, these studies are still controversial and more research needs to be conducted in this area to elucidate the extent of this relationship. Specifically, there are many potential confounding factors and it is necessary to investigate the association between IGF and breast cancer risk after controlling for these factors. This study proposes to investigate the relationship between total IGF-1, free IGF-1, and IGFBP-3 and mammographic density with the ability to control for menopausal status, ethnicity, physical measurements, and precise body composition measurements as derived from dual energy x-ray absorptiometry (DXA).

## **Body**

Since the last annual summary, I have focused on preparing the blood samples for analysis using the ELISA kits. This has included communicating and obtaining human subjects approval from both the University of Arizona Institutional Review Board (IRB) as well as from the sponsor. Interacting with the IRBs has been a great opportunity that has provided me with the knowledge and skills that will be very necessary for my future work in research. Additionally, there was a delay in receiving the de-identified samples from the parent study as other staff members from that study we required to spend their time preparing the samples for my use. Lastly, additional time was spent ensuring that the ELISA kits were still in good condition when they arrived here since they were shipped without refrigeration to Arizona in the summer. I have completed all lab work except for one more week of running the free IGF-1 ELISAs. The de-identification of the last batch of the samples was completed on August 9, 2004.

My progress in the doctoral program has been slowed slightly due to some health problems that I suffered from last fall and winter. Fortunately, I have resolved those health issues and am currently pursuing my degree with full force. I plan to finish my degree in May 2005 and am still on track to have this research completed by then. The lab work will be completed by the end of August 2005 and then the data will be merged and the analysis will begin. The data from the parent study has been cleaned and is ready to be merged with the results from this study as soon as the final laboratory analyses are complete. I expect manuscript preparation and submission to begin in December of 2004 and continue through the spring of 2005.

## **Key Research Accomplishments**

- Communicate with the local and sponsor's IRB to receive human subject's approval.
- Finished ELISAs for measuring total IGF-1 and IGFBP-3 from serum.
- ELISAs for measuring free IGF-1 from plasma are in progress and will be completed by August 31, 2004

## **Reportable Outcomes**

None.

## **Conclusions**

It is difficult to draw any conclusions from the results of this study so far. However, I have been involved with the parent study since the beginning of the study and feel that I have learned and accomplished a great deal. I have learned the daily procedures of managing an epidemiological research study, and some of the difficulties that can be encountered when doing so. I've had the opportunity to work with study participants, research staff, administrative personnel, and members of the Human Subjects Committee. The experience of working with the local and the sponsor's human subjects committees has provided me with an opportunity to learn some of the skills that will be fundamental to my future career in epidemiological research. The experience of conducting the laboratory analyses has taught me laboratory skills as well as given me a better understanding of the basic science that is vital to a molecular epidemiologist. Each of these experiences has helped to prepare me for the future when I will be conducting my own research studies. I hope that I will be able to use all of the experience gained on this study to conduct good, solid scientific research that can be used to improve prevention of or treatment for breast cancer.

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